

ABSTRACT

A down hole heating system for use with oil and gas wells which exhibit less than optimally achievable flow rates because of high oil viscosity and/or blockage by paraffin (or similar meltable petroleum byproducts). The heating unit the present invention includes shielding to prevent physical damage and shortages to electrical connections within the heating unit while down hole (a previously unrecognized source of system failures in prior art systems). The over-all heating system also includes heat retaining components to focus and contain heat in the production zone to promote flow to, and not just within, the production tubing.